

**REMARKS**

At the time of the Office Action dated June 23, 2008, claims 1 and 3-22 were pending in this application. In this Amendment, claims 1, 13, 15, and 16 have been amended, and claim 14 canceled. Care has been exercised to avoid the introduction of new matter. Support for the amendments to the claims can be found on, for example, page 21, lines 14-15 of the specification.

Claims 1, 3-13, and 15-22 are now active in this application, of which claims 1 and 13 are independent.

**Claim Rejections—35 U.S.C. § 112**

Claim 14 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. This rejection has been rendered moot by the cancellation of claim 14. Withdrawal of the rejection of claim 14 is, therefore, respectfully solicited.

**Claim Rejections—35 U.S.C. § 103**

1. Claims 1, 3, 5-8, 10, and 11 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kataoka et al. (U.S. Patent No. 6,133,522, hereinafter “Kataoka”) in view of Kloppel et al. (U.S. Patent Application Publication No. 2003/0170449, hereinafter “Kloppel”), and further in view of Nakajima et al. (U.S. Patent No. 6,297,443, hereinafter “Nakajima”) (see paragraph 1 of the Office Action); and claims 13-15, 17-19, and 21 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Kataoka in view of Kloppel, and further in view of Nakajima (see paragraph 4 of the Office Action).

Applicants submit that Kataoka, Kloppel, and Nakajima, either individually or in combination, do not disclose or suggest a photovoltaic device including all the limitations recited in independent claim 1. Specifically, the applied combination of the references does not teach,

among other things, “a first conductivity type single crystalline silicon semiconductor layer,” as recited in claim 1.

In the statement of the rejection, the Examiner, referring to Fig. 5 and Example 1 of Kataoka, identified a p-type microcrystalline Si in Example 1 as the claimed first conductivity type crystalline semiconductor layer which is now recited in claim 1 as first conductivity type single crystalline silicon semiconductor layer. Applicants believe that the p-type microcrystalline Si in Example 1 is meant to be a “p-type layer 100 Å thick” to form semiconductor layer 503 having a layer structure (see column 14, lines 24-32).

According to Kataoka, the p-type microcrystalline Si in Example 1 is part of a semiconductor layer 503 of Fig. 5A. Kataoka describes in column 8, lines 54-67 as follows (emphasis added):

The semiconductor layer 503 is a section where photoelectric conversion takes place. Specific examples of materials for the semiconductor layer 503 include pn junction type polycrystalline silicon materials, pin junction type amorphous silicon materials, and compound semiconductors including CuInSe<sub>2</sub>, CuInS<sub>2</sub>, GaAs, CdS/Cu<sub>2</sub>S, CdS/CdTe, CdS/InP, and CdTe/Cu<sub>2</sub>Te.

Accordingly, it is apparent that semiconductor layer 503 of Kataoka is **NOT** made of single crystalline silicon, and thus, the “p-type layer 100 Å thick” in Example 1 referred to by the Examiner does **NOT** correspond to the claimed first conductivity type single crystalline silicon semiconductor layer. Kloppel, and Nakajima do not cure the deficiencies of Kataoka.

Based on the foregoing, Kataoka, Kloppel, and Nakajima, either individually or in combination, do not disclose or suggest a photovoltaic device including all the limitations recited in independent claim 1. The above discussion is also applicable to independent claim 13, reciting a first connectivity type single crystalline silicon semiconductor layer. Dependent claims 3, 5-8 and 10-11, 13, 15, 17-19, and 21 are also patentably distinguishable over Kataoka,

Kloppel, and Nakajima at least because these claims respectively include all the limitations recited in independent claims 1 and 13. It is noted that the rejection of claim 14 has been rendered moot by the cancellation of the claims. Applicants, therefore, respectfully solicit withdrawal of the rejection of the claims and favorable consideration thereof.

2. Claims 4 and 12 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka in view of Kloppel and Nakajima, and further in view of Morizane et al. (U.S. Patent Application Publication No. 2001/0045505, hereinafter "Morizane") (see paragraph 2 of the Office Action); claim 9 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka in view of Kloppel and Nakajima, and further in view of Kitae et al. (U.S. Patent Application Publication No. 2001/0005053, hereinafter "Kitae") (see paragraph 3 of the Office Action); claims 16 and 22 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka in view of Kloppel and Nakajima, and further in view of Morizane (see paragraph 5 of the Office Action); and claim 20 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kataoka in view of Kloppel and Nakajima, and further in view of Kitae (see paragraph 6 of the Office Action).

Claims 4, 9 and 12 depend on independent claim 1, and claims 16, 20 and 22 depend on independent claim 13. Applicants thus incorporate herein the arguments made in response to the rejection of independent claims 1 and 13 under 35 U.S.C. § 103 for obviousness as predicated upon Kataoka, Kloppel, and Nakajima. The Examiner's additional comments and reference to Morizane and Kitae do not cure the deficiencies of the applied combination of Kataoka, Kloppel, and Nakajima. Applicants, therefore, respectfully solicit withdrawal of the rejection of the claims and favorable consideration thereof.

### **Conclusion**

Accordingly, it is urged that the application is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an

interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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